XI

Pottery and Glass Fragments from the Aden Littoral, with Historical Notes

Part I: Historical Notes

The Sites

THE pottery and glass fragments examined here were collected in 1941 from three sites on the Aden littoral. They were picked up on the surface at (1) Kawd am-Saila, the "Dune of the Flood-Course", a large isolated mound situated on the main Aden-Lahej-Yemen road, (2) Al-Ḥabīl, lying north-west of Lahej, just a little off the main Yemen route, and (3) Zingibar. The last-named site lies within the Abyan oasis on the coastal plain, some 35 miles north-east of Aden. For an area of some miles there, extending almost to the foothills, the surface is covered with potsherds of all kinds and periods, both glazed and unglazed. In places the ground is quite red with fragments of unglazed earthenware. Abyan is a site of great antiquity well known to Arab authors, and in pre-Islamic inscriptions, but the other two places have not yet been identified.

All three sites have markedly similar features; they lie on alluvial soil near sandy steppe, and they were undoubtedly the site of towns constructed in clay-brick. A flood in 1941 had revealed a small portion of clay-brick wall at Ḥabīl. All the sites showed traces of glass-workings, and large lumps of glass frit lay about everywhere. Kawd am-Saila, the large, probably partially natural mound of the Aden plain, is surrounded by kiln sites which cover a not inconsiderable extent of ground, and good burnt brick kilns are visible here and there.[1] At Ḥabīl a Mameluke copper coin, apparently belonging to an already known series, was found on the surface.

The site richest in Chinese material is the Abyan area; Abyan

[1] It may be possible to identify Kawd am-Saila with the aid of the itineraries of Abū Makhrama. Révoil as early as 1883 describes a site "aux alentours" of Shaikh 'Uthmān where he found material similar to that of the three above-mentioned places; but as he gives no more precise indication, it may be Kawd am-Saila that he means. One would, however, expect the mounds of Shaikh 'Uthmān to contain material of the same type.

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was once perhaps a port, certainly an important caravan mart, and a great administrative centre in medieval times. Though much smaller than Abyan, Kawd am-Saila surface finds contained a higher proportion of Far Eastern fragments. Ḥabīl, on the other hand, probably only a poor glass-manufacturing village, shows a small proportion of Chinese to local material. In the tribal country of the Aden Protectorate to the west of Aden there seem to be no sites of this kind, but 'Awlaḳīs informed us that in their country similar sites exist. We can confidently expect to find many other sites corresponding to these three in the Yemen.

Another marked feature in the surface finds consists of various classes of glassware in great profusion. There are glass bangles of the type found on many Near Eastern sites, to say nothing of the Yemen,[1] and even the Aden golf-course,[2] as well as glass bottles and moulded wares. At Abyan at least Islamic and pre-Islamic fragments lie intermingled on the surface, and occasional pieces of cheap Far Eastern wares or European glass of the present day occur here and there.

The Import of Chinese Porcelain to Islamic Countries—A Chronological Series of Literary Sources

The period during which the first imports of Chinese pottery began to enter the Islamic world cannot yet be precisely determined. That the sea-routes from the Far East to the Mediterranean by way of the Red Sea and Persian Gulf, were in use before Islam is known, even though commerce may have been interrupted or diverted from time to time by fear of exactions or by piracy. The object of commerce most prized, however, so frequently mentioned by writers, is Chinese silk; the significant question is when did Chinese porcelain also begin to come through to the Near East in the holds of the China trading-vessels. Balādhurī and Dīnawarī speak of Ubulla as a port of China at the time of its capture by the Arabs. According to Ṭabarī,[3] Manṣūr was told that by founding

[1] See C. Rathjens and H. v. Wissmann, *Vorislamische Altertümer in Südarabien-Reise II* (Hamburg, 1932), p. 155, phot. 103.

[2] Major Freeman of the Aden Levies found a bracelet fragment of this sort there in 1941.

[3] Ṭabarī, *Annales*, ed. M. J. de Goeje (Leyden, 1879–1901), iii ,275. Cf. Yāḳūt *Mu'ḏjam al-Buldān* (Leipzig, 1866–73), i, 678.

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his capital at Baghdad (A.D. 765) among other advantages " supplies will come to you in ships from India and China ". No certain reliance can be placed upon either of these statements, but a more trustworthy authority tells of an Arab merchant in China as early as before H. 140 (A.D. 758).[1]

The writers are indebted to Mujtaba Minovi for a new and invaluable reference to the appearance of china-ware in the Islamic world, anterior to the finds at Samarra (H. 221 (A.D. 836)–H. 279 (A.D. 892)).[2] It is stated by Baihaḳī [3] that in a present sent by 'Alī ibn 'Īsā from Khurāsān to Hārūn al-Rashīd at Baghdad, there were twenty pieces of Imperial China-ware (*Chīnī Faghfūrī*) consisting of bowls (*ṣaḥn*), cups (*kāsa*), half-cups (*nīm-kāsa*), no one of which had been seen at the court of any king. Two thousand other pieces are mentioned, mostly bowls and cups, without comment, so it would seem that Chinese pottery was already familiar in Baghdad in fairly large quantities during Rashīd's reign (H. 170 (A.D. 786)–H. 193 (A.D. 806)), though not the Imperial ware. It is, however, important to remark that this present came overland, not by the sea-route; obviously china-ware in large quantities would be easier and safer to convey by sea rather than by land. Djāḥiẓ who died in H. 257 (A.D. 869) at the age of ninety, mentions in a treatise on articles of trade, that from China comes pottery (*ghaḍā'ir*).[4]

Tanūkhī [5] speaks of more than thirty china jars (*ḥubb Ṣīnī*) full of the scent known as *ghāliya*, the best of which was made in the reign of the Caliph al-Wāthiḳ (H. 227 (A.D. 842)–H. 232 (A.D. 847)). One of the jars was so large that it had to be carried by a number of slaves with poles and a frame, and it had a very wide neck. In the reign of Mutawakkil (A.D. 846–861), a certain poet had some pieces of china smashed by a ram which he was fattening for the 'Īd al-Aḍḥā. These included a lamp (*sirādj*), which he laments in

[1] Quoted in T. Lewicki, " Les premiers commerçants arabes en Chine," *Rocznik Orjentalistyczny* (Lwów, 1935), xi, pp. 73–168.

[2] A few Chinese weavers, jewellers, and painters were to be found in Baghdad quite early. See Paul Pelliot, " Des Artisans Chinois à la Capitale Abbaside en 751–762," *T'oung Pao* (Leyden, 1929), xxvi, pp. 110–112.

[3] Muḥammad ibn al-Ḥusain (Abu 'l-Faḍl) Baihaḳī, *Tārīkh-i Baihaḳī* (Persian text, Teheran, 1307), p. 425.

[4] Djāḥiẓ, Al-Tabaṣṣur bi l-Tidjāra," *Revue de l'Acad. Arab. de Damas*, xii (1932).

[5] Tanūkhī, Nishwār al-Muḥāḍara, *Table Talk of a Mesopotamian Judge*, ed. and trans. by D. S. Margoliouth (London, 1921), text, p. 141, trans., p. 154.

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a poem,[1] calling it " a bowl from China (*ṣīnīyat al-Ṣīn*) at the time when the painter of talent (*muṣawwir*) devised it with pictures (*taṣāwīr*)."

Another interesting piece of pottery is described by Buzurg ibn Shahriyār,[2] in that pleasant collection of travel stories entitled *The Wonders of India*. He gives an account of a certain Jewish merchant who left for the Far East about the year H. 270 (A.D. 883–4) with a very small capital, and returned to the city of 'Umān (probably Ṣuḥār is intended) in H. 300 (A.D. 912–3), with a million dinars, Chinese silk, and a large quantity of China-ware (*Ṣīnī*). He presented the governor of 'Umān with a " black vase of porcelain, the top of which shone with gold (*barnīyat Ṣīnī sawdā' muḍī'at al-Ra's bi 'l-dhahab*) ". This piece, which came from China itself, contained a present of gold fishes. It is interesting to note that after he was arrested by the orders of the Caliph al-Muḳtadir and detained, the story caused merchants to stop putting in at 'Umān town and the ports of Iraq. Maḳdisī [3] (*circa* H. 375 (A.D. 985)), quotes pottery (*ghaḍār*) as one of the imports of 'Umān, though this probably includes Persian wares.

These early references must suffice to indicate the early date at which china-ware was imported into Mesopotamia, and the continuity of those imports.

Imports of China-ware to South-Western Arabia

The merchant Sulaimān [4] says, " Les marchandises (de la Chine n'arrivent qu') en petite quantité (à Basra et à Baghdad). L'importation de ces marchandises est peu importante (en pays arabe), à cause des fréquents incendies qui éclatent à Khānfū (Canton). Parmi les causes (de la rareté des marchandises chinoises en pays

[1] Abu 'l-Faradj al-Iṣfahānī, *Aghānī* (Cairo, H. 1284), xiii, 27. Ref. from the late Rhuvon Guest. Idrīsī, *Géographie*, trans. P. A. Jaubert (Paris, 1836–1840), i, 194, calls the capital of China, Ṣīnīyat al-Ṣīn. The term *ṣīnīya* early came to mean simply a bowl. See Ibn Abī Uṣaibi'a, *Uyūn al-Anbā fī Ṭabaḳāt al-Aṭibbā*,' ed. A. Müller (Cairo, 1882), i, 202, where a *ṣīnīya* of gold was placed before al-Muwaffaḳ (A.D. 870–892).

[2] See text and trans. in P. A. Van der Lith and L. Marcel Devic, *Livre des Merveilles de l'Inde* (Leyden, 1883–6), pp. 107 ff. T. Bent, *Southern Arabia* (London, 1900), mentions celadon at Bahrain.

[3] Maḳdisī, *Descriptio imperii Moslemici* (Leyden, 1906), p. 97.

[4] See Gabriel Ferrand, *Voyage du Marchand arabe Sulaymân en Inde et en Chine rédigé en* 851 *suivi de remarques par Abû Zayd Ḥasan* (Paris, 1922), pp. 37–8.

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arabes) il faut également mentionner les naufrages des navires... les pillages... et les longs séjours... ce qui oblige à vendre leur marchandises avant d'arriver à destination en pays arabe. Parfois le vent chasse les navires jusqu' au Yémen ou dans d'autres pays où sont alors vendues les marchandises." Sulaimān makes mention also of cups and bowls as thin as glass, and so transparent that you can see the colour of the liquids they contain through them, manufactured by the Chinese.[1] It must, however, be remarked that the contents of Sulaimān's book, believed to be written in A.D. 851, and annotated in 916, seem to be of questionable reliability. It seems unlikely, for instance, that the outbreaks of fire in Canton could affect the porcelain trade. The shipping that was driven by weather over to the Yemen coast cannot, of course, have been the only shipping that reached that part of the Islamic domains.

Isḥāḳ ibn al-Ḥusain,[2] writing about H. 340 (A.D. 950), states of Aden, "There, wonderful vases (*āniya*) are made." Interpreting the passage in the light of the Islamic pottery found on the surface, it seems improbable that he could be referring to local manufactures, but that he must have had the imported Chinese wares in mind.

'Umāra al-Ḥakamī states,[3] "I have seen a statement of the revenues of Ibn Ziyād in H. 366 (A.D. 976–7), and notwithstanding the reductions they had undergone, they amounted to a million of *'Aththar* dinars. This did not include various duties he levied upon ships from India, nor contributions of musk, camphor, ambergris, sandalwood, and china (*Ṣīnī*)." Apparently, as indeed other writers confirm, it was customary to take part of the dues on cargoes in kind. The ports specifically mentioned as coming under Ibn Ziyād's control are Aden, Shiḥr, Mirbāṭ, and Abyan, and the maritime provinces of the Red Sea coast as far as Ḥalī. Abyan could scarcely be used as a port for ships of any size nowadays. It might be noted that musk came from China in jars.[4] Only some ten years later, Maḳdisī,[5] excuses himself from listing the imports of Aden as too many to be enumerated, but which include the merchandise of China (*tiḏjārat al-Ṣīn*) for which it is proverbial.

[1] Ibid., p. 54.

[2] Isḥāḳ ibn al-Ḥusain "Ikām al-Marḏjān fī ḏhikr al-Madā'in al-Mashhūra fī kull Makān," ed. and trans. by A. Codazzi, *Rendiconti della R. Accademia dei Lincei* (Roma, 1929), vi. v.

[3] H. C. Kay, *Yaman, its early medieval history* (London, 1892), p. 8.

[4] *Voyage du marchand arabe Sulaymân*, op. cit., p. 110.

[5] Maḳdisī, op. cit., p. 97. His evidence is valuable as he actually visited Aden.

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In the year H. 546 or 547 (A.D. 1151–3), a governor of Aden left, amongst other effects, "beautiful objects from China." [1]

Writing before A.D. 1154, Idrīsī says that at one time merchants came from all parts to Ṣuḥār ('Umān) to import products of the Yemen. From Ṣuḥār expeditions were made to China, but this had ceased in Idrīsī's time. A certain governor of the Yemen had seized Kīsh opposite Muscat. "Il la fortifia, la peupla et y équipa une flotte à l'aide de laquelle il se rendit maître du littoral de l'Yemen. Cet homme occasiona beaucoup de dommages aux marchands, dépouilla chacun de son bien, et affaiblit le pays tellement que le commerce se détourna de la voie d'Oman et se reporta vers Aden... Cet homme continue actuellement encore ses expéditions déprédatrices." [2] Yet again, Idrīsī [3] cites Aden as the point of departure for ships destined for Sind, India, and China. He gives a list of imports from China, including "la vaiselle de terre". At Zabīd in the Lower Yemen various Indian spices are exported and Chinese wares [4]; we should therefore expect to find fragments of Chinese pottery about Zabīd.

Medieval References to Chinese Porcelain in South Arabia

In the histories of the Mamelukes of Egypt a Jewish family of bankers and merchants, known as the Kārimī house, is frequently mentioned. A member of this family, a cloth merchant, is noticed by the Yemenite author Abū Makhrama at Aden, his date of birth being A.D. 1149, but it is a later member of this same family who became a great merchant in the China trade. He lived in the time of the Mameluke al-Malik al-Nāṣir, and was known as 'Izz al-Dīn 'Abd al-'Azīz ibn Manṣūr al-Kūlamī (of Quilon (?) [5] al-Kārimī. He migrated from Aleppo where he was born, to Baghdad, and "crossed to India and the island of Kīsh and Hurmuz, and reached

[1] *'Umāra*, H. C. Kay, op. cit., p. 80.

[2] *Idrīsī*, op. cit., i, 152.

[3] Ibid., i. 51.

[4] Ibid., i, 49–50. Idrīsī must be used with caution in Jaubert's translation which is unreliable and full of errors. Idrīsī actually mentions a number of cities in China where porcelain was manufactured, but I have not succeeded in identifying them, and the names are suspect in Jaubert's citation. The Polish orientalist, T. Levitsky, is, however, preparing a new text from which it might be possible to identify these cities. See Idrīsī (Jaubert), i, 84, 193–4.

[5] Quilon was a centre for the manufacture of a local porcelain inferior to that of the genuine Chinese type.

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China which he entered and left five times . . . Then he returned from India to Aden, and the Lord of the Yemen took a percentage (*djumla*) of his money, of the Chinese objets de vertu, and china-ware (*Ṣīnī*) which he brought with him, going beyond the established limits with him. Then he reached Egypt in H. 704 (A.D. 1304–5)." [1] It might be remarked here [2] that a wealthy Mameluke Qadi in the year H. 738 (A.D. 1337–8), selling off his effects in Cairo, realized no less than 40,000 dirhams (perhaps some two or three thousand pounds) for various kinds of China vases (*al-Awānī al-Ṣīnī*).

To return to our Kārimī merchant, however, another version of the same incident is given by al-Khazradjī.[3] " This year (H. 703 (A.D. 1303–4)), a merchant arrived from the land of Khaṭā (Cathay) on the road to China (*Ṣīn*), called 'Abd al-'Azīz ibn Manṣūr the Aleppan, with property of great importance. He had with him 300 buhārs of silk (*ḥarīr*), a single buhār being equivalent to 300 Baghdad raṭls (lbs.), 450 raṭls of musk run into vessels of lead, an enormous quantity of Chinese pottery (*al-fakhkhār al-Ṣīnī*), and a splendid collection of vessels of jade (reading *al-awānī al-yashm*), inlaid (*muṭ'am*) with gold, consisting of large plates (*ṣaḥn*)." Dues paid on these goods came to 300,000 dirhams.

Under the annals for the year A.D. 1305, the same author [4] mentions " pottery of china, and jade (*fakhkhār al-Ṣīnī wa 'l-Yashm*) of high quality, consisting of plates (*ṣaḥn*), cups (*zubdīya*, according to Dozy, originally couleur de crême . . . une vase faite de cette sorte de porcelaine, . . . tasse, écuelle, assiette, plat), the beauty which it is impossible adequately to describe." The notice also mentions Chinese gold-embroidered garments, platters (*aṭbāḳ*), jars (*awānī*), and boxes of musk.

Again, under the annals for the year A.D. 1392,[5] it is mentioned that the Sultan has " vessels of porcelain (*āniyat al-Ṣīnī*), and of jade (*yashm*), Ḳāshānī, and pottery (*fakhkhār*), consisting of plates

[1] Muṣṭafā Djawād. " Tidjārat al-'Irāḳ fī 'Uṣūr al-Ḥukm al-Mughūlī," *Madjallat Ghurfat Tidjārat Baghdād* ,1944, vii, pts. i, ii, iii, p. 65, based on Maḳrīzī, *Kitāb al-Sulūk*.

[2] Maḳrīzī, *Kitāb al-Sulūk li-Ma'rifat Duwal al-Mulūk*, ed. M. M. Ziyāda (Cairo, 1942), II, ii, p. 442.

[3] El-Khazreji's *History of the Resúlí Dynasty of Yemen*, text ed. by Muhammad 'Asal (London, 1913–18), iv, 350.

[4] Ibid., iv, 361.

[5] Ibid., iv, 233.

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(*ṣaḥn*), cups (*zubdīya*), jars (*djirār*), jars,[1] white jugs (*kūz*), cups of chalk-colour (? *ṭabāshīr*),[2] glass-bottles (reading *ḳawārīr* for *ḳarārīb*), and ablution-pots (*maṭāhir*)." At the same date the Sultan had brought out,[3] " 500 plates (*ṣaḥn*) of porcelain (*Ṣīnī*) never previously used, apart from that which had been previously used." There was also Zabīd pottery (*fakhkhār*), evidently a local ware.

One is tempted to suggest, although without adequate justification, that jade (*yashm*) in the passages cited, might refer to celadon pottery rather than to stone vessels of jade. Quatremère [4] actually derives *yashm* from the Chinese *yuh-shih* (jade), but Dr. W. B. Henning, in a learned communication, informs us that the word exists in various forms in Akkadian, Biblical Hebrew, Greek (ἴασπις), and Soghdian, etc. It will be recalled that the Chinese themselves compared certain types of pottery with jade.[5]

One Arabic author, Ibn Baṭṭūṭa,[6] even tells us whence some of this medieval china came, for he says, " Sín-kalán (Canton) is a city of the first rank, in regard to size and the quality of its bazaars. One of the largest of these is the porcelain bazaar, from which porcelain is exported to all parts of China, to India, and to the Yemen." In view of the existence of provincial wares amongst the fragments examined here, it should be noted that Arabic authors from Ibn Khurdādbih to Ibn Ïyās (fifteenth century), mention Lūḳīn (*Lung-pien*) near Hanoi, as a centre for the manufacture and export of Chinese porcelain. Moreover, some pieces of porcelain now in Constantinople, but believed to have been brought from the Yemen, seem to have been manufactured in Annam.[7] Yāḳūt gives as the exports of Java (*Djāwa*), " aloes, camphor, Chinese simples, and China-ware (*al-ghaḍā'ir al-Ṣīnī*)." [8] It seems likely that

[1] Reading *adwāḥ* for *adwādj*. For *dawḥ*, see C. v. Landberg, " *Études sur les Dialectes de l'Arabie Méridionale*, i. Ḥaḍramoût (Leiden, 1901), p. 576, meaning " cuve, jarre ".

[2] According to Dozy, this term " semble désigner la matière dont on fait certaines coupes ".

[3] Khazradjī, op. cit., iv, 233.

[4] Cf. M. Quatremère, *Notice de l'ouvrage persan qui a pour titre Matla-assaadëin* ... Not. et Ext. (Paris, 1843), xiv, 476, with a long note on *yashm*, citing many sources.

[5] W. B. Honey, *Ceramic Art of China* (London, 1945), p. 39.

[6] Ibn Baṭṭūṭa, H. A. R. Gibb, Ibn Battuta, *Travels in Asia and Africa*, 1325–1354 (London, 1929). Cf. text of Defremery and Sanguinetti, iv, 272.

[7] W. B. Honey, op. cit., p. 165.

[8] Yāḳūt, op. cit., iii, 444.

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reference is made in this case to a type of porcelain made in Java.[1]

African Sites similar to the Arabian Sites

As much of the territory adjacent to South-western Arabia is unexplored, or from an archæological standpoint virtually unexplored, we do not possess even an incomplete list of the many sites there must be which resemble those under discussion.

From Chinese records it seems that there is little doubt but that Chinese mariners visited the East African coast before Islam. According to Schwarz [2] too, "The whole coast from Kishmayu to Zanzibar is littered with Chinese pottery." Chau Ju-Kua [3] in the twelfth to thirteenth centuries, records that Malabar and the Ta-Shī (Arab and Persian) localities along the sea-coast send ships to Zanzibar with white cotton cloth, porcelain, copper, and red cotton. It seems likely that porcelain would begin to appear in East Africa about the same time as it began to arrive in Aden. Sung coins have been found in Madagascar.

In Mogadischio, Stuhlmann [4] discovered celadon in association with Chinese coins (the latter mainly of the eleventh and twelfth, but also of the thirteenth century A.D.), vitreous paste, and Arabic coins. In British Somaliland, A. T. Curle [5] reports sites closely parallel to those on the Arabian shore. They contain celadon of the Sung and Ming dynasties from the twelfth to fifteenth centuries,

[1] The great lexicographer al-Fīrūzābādī, who settled in the Yemen towards the end of the eighth century of the Hiḏjra, quotes in his dictionary, an account of the manufacture of porcelain resembling that of Marco Polo and some known Arabic sources, but with certain differences. From China come "the Chinese vessels made there from the earth (*turāb*) of the mountains there, vomited up by the fire, like (char)-coal. To this they add stones (*ḥiḏjāra*) of theirs, over which they light fire for three days. They then pour water on them so that it becomes like earth (*turāb*). They fire it for some days, the best being that which is fired for (the period of) a month, or else that which is fired for fifteen to ten days, but not less than that. Some is exported to all countries." *Tāḏj al-ʿArūs* (Būlāḳ, H. 1307–8), ix, 262.

[2] E. H. D. Schwarz, "The Chinese Connection with Africa," *J. Roy. As. Soc. Bengal* (Calcutta, 1938), iv, ii, p. 175 ff.

[3] F. Hirth and W. W. Rockhill, *Chu-fan-chih, on the Arab and Chinese Trade in the Twelfth and Thirteenth Centuries* (St. Petersburg, 1911), p. 126.

[4] See F. Hirth, "Early Chinese Notices of East African Territories," *Jl. American Oriental Soc.* (New York, 1909).

[5] A. T. Curle, "The Ruined Towns of Somaliland," *Antiquity* (London, Sept., 1937), pp. 315–327, with map. Some of Curle's material is in the Dept. of Enthnology at the British Museum.

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and blue and white ware of the sixteenth and seventeenth centuries. There are numerous fragments of pottery and glass, including glass bangles which seem to be a characteristic export of Southern Arabia. One of these sites is at Zaila, a port well known to Arab medieval geographers, another lies a hundred miles to the south, and another within the Abyssinian border, some 200 miles south of Zaila.[1]

Hobson [2] has examined Chinese fragments from 'Aidhāb near old Suakin on the Sudan's Red Sea coast. According to Maḳrīzī [3] 'Aidhāb was abandoned in A.D. 1358, for Aden and Jedda, which became large ports, but no doubt, traffic still reached the port until its destruction in A.D. 1426 by the Mameluke al-Ashraf Barsbai.

A Chinese Thirteenth Century "Export Drive"?

Like the Romans, who were apprehensive of the constant drain of coin and the precious metals eastwards in payment for Far Eastern luxuries such as silk and spices, the Chinese government of the thirteenth century had considerable misgivings about the export of coin from China. Kuwabara [4] informs us that in A.D. 1219, "silks, brocade, porcelain, and lacquered wares were made to pay for foreign goods instead of coins," by the Government of the day. It may possibly be from this period that Chinese ceramic wares became even more plentiful in the Near East, though there is abundant evidence of a large import of china before this time.

Arab Glass in the Far East

Near-Eastern glass, it is known, was carried to the Far East in or before the eighth century A.D., for several pieces of it are preserved

[1] See also G. Caton-Thompson, *The Zimbabwe Culture* (Oxford, 1931), index for imports of Arab glass, some Persian pottery, Chinese celadon and porcelain into East Africa. The Chinese wares belong mostly to the thirteenth to fifteenth centuries, but pl. xliv shows a Ming bowl as late as *circa* A.D. 1700. Miss Caton-Thompson was kind enough to put photographs at our disposal of a Chinese ginger-jar, probably Ming, which she purchased in Ḥaḍramawt.

[2] R. L. Hobson, "Chinese Fragments from Aidhab..." *Trans. O.C.S.*, (London, 1926–7), p. 19–22.

[3] As quoted in R. Weill, *La Presqu'île de Sinaï* (Paris, 1908), p. 94.

[4] Jitsuzo Kuwabara, *On P'u Shou-Kêng, a man of the Western Regions* . . . Memoirs of the Research Department of the Toyo Bunko (Tokyo, 1928), p. 27.

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in the Shōsō-in at Nara in Japan, where they were deposited about A.D. 750.[1]

Hirth and Rockhill [2] quote a Chinese source written prior to A.D. 572, dealing with the period A.D. 385–556, which states that the following articles were either imported or made known by the Persians [3] to the Chinese, "coral, amber, cornelians, pearls, glass both transparent and opaque," etc., all of which are products characteristic of the South Arabian coast.[4] Describing the markets of the pre-Islamic Arabs, Ḳalḳashandī [5] says that in Ṣan'ā', capital of the Yemen, Arab merchants used to buy kharaz, glass beads or trinkets being perhaps meant. These vague indications would suggest that glass may have been manufactured in Southern Arabia before Islam.

Writing in A.D. 1178, Chóu K'ü-feï [6] says, "The products (of Ma-li-pa, the Ḥaḍramawt coast of Arabia according to the editors, but it probably included the whole of the southern coast and the port of Aden) are frankincense, ambergris, pearls, opaque glass, rhinoceros horns, ivory, coral, putchuk, myrrh, dragons-blood, asafœtida, liquid storax, oak-galls, and rosewater, to trade in all of which the countries of Ta-shï resort to this place." This passage seems to be fairly sound evidence of the manufacture of glass on the South Arabian coast, and though rose-water is not mentioned by the Arab geographers as an export of South Arabia, Tomé Pires speaks of rose-water of Ṣan'ā', and says that Aden exports rose-water.[7]

Chau Ju-Kua [8] says, "Liu-li comes from several of the countries of the Ta-shï. The method followed in melting it is the same as that in China, that is to say, it is made by burning oxide of lead,

[1] Jirottarada, *English Catalogue of Treasures in the Imperial Repository Shōsōin* (Tokyo, 1930), published by the Imperial Household Museum, plates l, li, lii, showing Sasanian (?) glass.

[2] F. Hirth and W. W. Rockhill, op. cit., p. 16.

[3] The Chinese did not very exactly distinguish between Persian and Arab traders, but knew both as "Persians".

[4] At a period shortly after this the Persians actually conquered the Yemen, but they seem to have had a considerable political influence along the South Arabian coast for some centuries before Islam.

[5] Ḳalḳashandī, *Ṣubḥ al-A'shā* (Cairo, 1913), i, 411.

[6] Quoted by Hirth and Rockhill, op. cit., p. 120.

[7] Armando Cortesão, *The Suma Oriental of Tomé Pires* (London, 1944), i, 18 and 43.

[8] Hirth and Rockhill, op. cit., p. 227.

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nitrate of potash, and gypsum. To these materials the Ta-shī add southern borax which causes the glass to be elastic, so that one may put it in water for a long time without spoiling it. It is, therefore, more valuable than the Chinese product." In lists of Ta-shī ports, Chau Ju-Kua quotes Ma-lo-pa (*Mirbāṭ*), Shī-ho (*Shiḥr*), and Nu-fa (*Ẓufār*).[1]

If, as seems likely, South Arabian glass was exported to Kirmān, where Stein found bracelets of the South Arabian type, then it would not be surprising to find it further afield, even in China. If we were to look for a reason for the cessation of glass manufacture on the Arabian coasts, it might be found in the Portuguese blockade of the Muslim world during the sixteenth century. It may have been the loss of the eastern markets and the heavy reduction in the volume of sea-traffic which brought gradual disaster on these glass-making towns and villages, and perhaps many others more than we know at present, as yet unreported.[2]

Ibn Baṭṭūṭa mentioned the Cantonese china exports to the Yemen; Marvazī [3] at the opening of the twelfth century speaks of Canton's imports of glass from abroad, though he gives no places of origin.

Possibly, therefore, Southern Arabia balanced its imports of chinaware and other commodities from the Far East by its exports of glassware.

Venetian Glassware in the Orient

Indications that this group of sites on the Aden littoral was frequented till a fairly late period is evident from the presence of a few Venetian fragments at Kawd am-Saila. According to Tomé Pires, writing in A.D. 1512–15, the Venetian galleasses brought many

[1] Ibid., p. 121.

[2] A good study of the economic consequences of this blockade is to be found in G. W. F. Stripling's *The Ottoman Turks and the Arabs*, 1511–1574 (Illinois, 1942). A locality named al-Mizdjādjīya, "die Glashütte, Ort in der Nähe von Zabīd wo Glas fabricirt wird," is noted by F. Wüstenfeld, *Die Çufiten in Süd-Arabien* (Göttingen, 1883), p. 146. Zabīd also was known for its manufactures of pottery. Abū Makhrama, *Tārīkh Thaghr 'Adan*, ed. O. Löfgren, *Arabische Texte zur Kenntnis der Stadt Aden im Mittelalter* (Uppsala, 1936), ii, 70, mentions a Ḥiṣn al-Qawārīr, "The Fortess of the Bottles" dating back to Aiyūbid times. Might this refer perhaps to a glass-manufacturing village? To-day, Ḥāfiẓ Wahba, *Djazīrat al-'Arab* (Cairo, 1935), mentions a place, Djazīrat Ḥassān, opposite Umludj on the Ḥidjāz coast, "from the sand of which glass is made."

[3] V. Minorsky, *Sharaf al-Zamān Ṭāhir Marvazī on China, the Turks, and India* (London, 1942), pp. 22 and 27.

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articles of European manufacture to Cairo, including "glass and other beads, and golden glass-ware." These were taken by traders to the Far East, and Pires[1] describes the dispersal of Venetian wares, including "glass of all kinds and colours":—

"The merchandise which these people (the Egyptians ?) take to India comes from Venice in Italy. It comes to Alexandria, and from the Alexandrine ware-houses it comes by river to the factors in Cairo, and from Cairo it comes in caravans with many armed people. It comes to Tor but this is not often, because on account of the nomad robbers they need many armed people to guard the merchandise. But at the time of the Jubilee (the Muslim pilgrimage) which is held every year in Mecca on the first day of February, when many people come, (the merchandise) is sent to Mecca with them. And from there it comes to Jidda and from Jidda it comes to the warehouses they have in Aden and from Aden it is distributed to Cambay, Goa, Malabar, Bengal, Pegu, and Siam."

Herein may lie an additional reason for the decline of glass-manufacturing on the South Arabian coast, except perhaps the coarser sorts, the competition of European glassware in the markets, once the monopoly of Arab enterprise. Until, however, these sites are examined in detail, all suggestions of this nature must be in the nature of speculation.

Part II. The Pottery and Glass from Kawd Am-Saila, Abyan, and Ḥabīl

At all three sites, Ḥabīl, Kawd am-Saila, and Abyan, the fragments of pottery and glass cover a remarkably long period. Types represented are in many cases well known from medieval sites elsewhere; some of them are quite obviously importations; and there is no positive evidence to suggest that the region developed any local manufacture of outstanding quality or character. The probabilities are in favour of local manufacture for the coarse unglazed pottery and the rougher kinds of glazed ware, and the presence at Kawd am-Saila of coarse lumps of greenish glass frit indicate that glass was certainly made there; not necessarily glass of high quality for export, but more likely useful glass for local consumption. In the Abbasid period local glasshouses existed

[1] Tomé Pires, op. cit., pp. 269, 12–13, cf. p. 43.

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almost everywhere, and the simpler styles were everywhere the same. There were, however, at Kawd am-Saila a few small shapeless pieces of opaque coloured glass, and a few short straight strips of variously coloured glass fused together. These could not have been beads, for they are unpierced ; no obvious use can be suggested for them ; and it is therefore possible that they represent debris from a glasshouse manufacturing the coloured glass bangles found in such quantity on the site.

It will be convenient to list the finds according to type. First the pottery, under three main headings: Pre-Islamic, Islamic, and Far Eastern imports. Then the glass.

Pottery

I. *Pre-Islamic.*

Several glazed fragments of the so-called " Parthian " pottery which may have been made at any time between the first and eighth century A.D. This class of ware, still current in the Sasanian period, seems to have gone out of use soon after the expansion of Islam. It has a coarse, greyish-yellow body, with thick walls, and a very thick and glassy blue-green alkaline glaze. The shapes were often of late classical derivation ; a fragment from Ḥabīl is apparently the handle, triangular in section, of an amphora. Some pieces had decoration of bosses in relief. The " Parthian " glazed ware seems to have been made above all in Mesopotamia and Syria ; it becomes increasingly rare as one goes eastwards into Iran. The fragments from Ḥabīl and Abyan were certainly imported.[1]

II. *Islamic.*

(*a*) *Unglazed Ware.*—Mostly of reddish clay, sometimes whitish on the surface, decorated with various scratched or simple carved designs. Presumably local, and impossible to date. Unglazed pottery with incised or moulded designs of the fine quality found on the ninth-century site of Samarra is absent. (Ḥabīl, Kawd am-Saila.)

(*b*) Red earthenware, painted in *radiating wedges of contrasting colour*, white, green, and purple. The colours are each embodied

[1] For " Parthian " and Sasanian green-glazed pottery, see especially the chapter by R. Ettinghausen in *A Survey of Persian Art*, ed. A. U. Pope (1938), vol. ii. Sir Aurel Stein, in *Archæological reconnaissances in North-western and South-eastern Iran*, 1937, plates xxi and xxvii, illustrates green-glazed fragments with relief-decoration like that here discussed. But some of his pieces, though green, are apparently lead-glazed and irrelevant for comparison here.

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in a lead-glaze to which tin oxide has been added, making it opaque. Similar ware is found in the Faiyūm (Egypt), but it is not impossible that these pieces from Ḥabīl were of local make. Date, perhaps tenth to eleventh century.

(*c*) Red earthenware, with lead glaze *mottled in green and brown*, probably in imitation of Chinese T'ang export ware. This type, which often has in addition to the mottling "*sgraffiato*" designs incised through a white slip, was almost universally made in the Islamic countries, from the ninth century onwards. The single piece from Ḥabīl suggests that the technique had not been adopted by local potteries of the ninth to tenth centuries, when this form of *sgraffiato* ware was most popular.

(*d*) Fine red earthenware with *sgraffiato* designs incised or carved through a good white slip, covered with transparent lead glaze streaked green and brown. This is a later development of *sgraffiato* ware, widespread throughout the Near East. The fragments are too small to give much sense of style; but they might belong to the twelfth or thirteenth century.

(*e*) Red or buff earthenware, covered with a lead glaze containing tin oxide to give varying degrees of opacity, and *stained in various shades of dull green*. Shapes mostly dishes or shallow bowls with a flattened rim and strong foot-ring, unglazed on the reverse. Obviously imitations, perhaps local, of Chinese "celadon" ware, which reached the Near East in greatest quantity between the thirteenth and fifteenth centuries, but was well known earlier. Actual Chinese celadon ware was found with the imitations at all three sites.

(*f*) Reddish earthenware thinly smeared with a *greenish yellow opaque glaze*, and crudely painted over the glaze in *purple* with designs of boxed triangles, running S-pattern, etc. Date uncertain; possibly later than fifteenth century, might be comparatively modern.

(*g*) Coarse red earthenware with small spots, triangles, etc. painted in *white slip* under a deep *blue-green lead-glaze*. Found only at Kawd am-Saila. Perhaps related to class (*e*) above.

(*h*) Red earthenware with a thin white *tin-glaze, painted in blue* (and green occasionally as well) with bands, zigzags, and radiating lines. Use of blue perhaps inspired by Chinese porcelain of the fourteenth to fifteenth centuries.

(*i*) Ware with similar painting, but made of a hard, whitish clay. Type of glaze indeterminate. Somewhat resembles in technical

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character the so-called "Athlit" ware of the thirteenth century, found on Crusader sites in Syria, Palestine, and Greece, but is probably not connected with that ware. Found only at Kawd am-Saila.

(*j*) Fine buff earthenware with white tin glaze, *painted in lustre.* Two fragments were found at Ḥabīl. On one the colours are yellow and brown, as found at Samarra; this piece must date from the mid-ninth century. The other piece is painted in monochrome greenish-yellow lustre, and must date from the tenth century. Both imports from Mesopotamia. Of the same origin was a small fragment from the rim of a plain white lobed bowl.[1]

(*k*) Wares with a whitish body of composite paste. This is the standard material for pottery of fine quality, in Persia, Syria, and Egypt, from the twelfth century onwards.

In some Egyptian pieces the paste composition is loose-knit and coarse in comparison with that used in Persia. Otherwise it is difficult to distinguish between Persian and Egyptian when the fragments are so small as were the very few from Ḥabīl. Some of these had dark blue glaze, one with turquoise glaze had an incised design under it. Late twelfth to thirteenth centuries.

III. *Far Eastern Imports.*

The accurate dating of early medieval Chinese wares is still hardly possible. In fact the best evidence comes from a site outside China itself—Samarra on the Tigris, occupied only between A.D. 836–892. Several kinds of Chinese porcelain and stoneware were found there. Many of the same types have also been found at Fusṭāṭ in Egypt. It is clear that from the ninth century A.D. onwards the Chinese habitually exported porcelain and stoneware to the Near East. Some certainly came overland through Persia, but the literary evidence, supported by the actual finds on sites such as these near Aden, indicates that much came by sea round India, and was conveyed onwards either up the Persian Gulf or the Red Sea.

There is no guarantee that Chinese wares of the types found at Samarra are to be dated within the same precise limits when they are found on other Islamic sites—for example, at Fusṭāṭ. Some kinds of Chinese ceramics were made with little variation in technique or decoration for generations, even centuries. This is particularly true of the wares made for export. Here there was no

[1] See F. Sarre, *Die Keramik von Samarra*, pp. 39, 40, and p. 67, I.N. 515 and *a*.

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close contact between the potters and clients of informed taste, such as operated under the later Sung and Ming dynasties, when the Emperors set up factories to make wares for their own delectation. The attention of students of Chinese ceramics has been mainly concentrated on these finer wares. But "provincial" potteries certainly existed all over China, and some of these may have contributed to the export trade. Difficulties consequently arise when we have to relate specimens from a non-Chinese site to the fine connoisseurs' pieces on which knowledge of Chinese ceramic history is so largely based. Thus, on the Aden sites and others in the Near East there appear fragments of porcelain painted in blue and white. Their quality is often mediocre, one might be tempted to say primitive. Should we assume that such pieces are earlier in date than the "Museum pieces" that show a more accomplished style and technique? Or are they comparatively late, their defects being due to their manufacture at provincial factories where standards were not high? There is much to be said in favour of the latter assumption. Increasing evidence points to the activity of minor factories in Southern China and Annam, the region most accessible to the Islamic merchants on their voyages. A blue and white bottle of very fair quality, which has probably been in the Imperial Ottoman collection at Constantinople since the sixteenth century, bears an inscription indicating that it was made in Annam in A.D. 1450 (*Transactions of the Oriental Ceramic Society*, vol. ii, 1933–4, p. 13, plate iv). In Sir John Home's collection are a fine jar and a bowl, stylistically akin to the Constantinople bottle, which are said to have been found in the Yemen itself (*Transactions O.C.S.*, op. cit., p. 72, plate xxx).

Stoneware and coarse porcelain were made in a country yet further to the westward of China proper, namely in Siam. Siamese celadon-glazed stoneware has been reported from Fusṭāṭ, and several fragments from the Aden sites, covered with a brown glaze, are almost certainly of Siamese origin.

We have therefore to expect that Far Eastern wares from these and similar sites will be difficult to date within wide limits for the following reasons. First, there are no complete pots, and the possible stylistic criterion of shape is thus usually lacking. Second, we have to deal with wares made specially for export, and therefore not of the highest quality, even though they may have come from potteries of high reputation in China itself. And thirdly, much of

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the material will be from provincial potteries in the Far East, about which little is at present known. The dates suggested for the various types listed below must therefore be accepted with caution. The period covered may run from the ninth century A.D. to the seventeenth.

(*a*) *Celadon-ware made at Yüeh Chou.*—Grey or occasionally brownish stoneware with glaze varying from greenish grey to olive brown. Easily recognized by the marks under the glazed bases caused by the oblong clay pellets or heaps of sand on which the vessels, here all bowls, were fired. Designs incised, or occasionally carved. Yüeh ware was found at Samarra and Fusṭāṭ[1]; it was made from the ninth century A.D. or earlier, until the twelfth or later. Of the three Aden sites, Abyan alone provided examples.

(*b*) *Celadon-ware made at Lung-ch'üan and elsewhere.*—White or greyish stoneware with thick blue-green or sea-green glaze; unglazed parts of the foot burn orange red. Though export may have begun earlier, this ware seems to have gradually supplanted the Yüeh celadon in the Near Eastern markets during the twelfth century A.D., where it continued in favour till the end of the fourteenth century and perhaps later. Early pieces are remarkable for their dull, rich glaze, resembling jade. Chinese records state that towards the end of the fourteenth century the main factories were moved from Lung-ch'üan to Ch'u Chou Fu. It is difficult to be sure of the origin of the celadon wares following this tradition in the fifteenth and sixteenth centuries; other local factories may have contributed. These later pieces tend to have a glassier and thinner glaze, often crackled, and a greyer paste. There are many excellent fragments (? twelfth to thirteenth century) from Kawd am-Saila, fewer from Ḥabīl. Most are of large open dishes with a narrow flattened rim, or of deep bowls, both kinds sometimes ribbed outside. From Ḥabīl came a shoulder-fragment of a very large baluster vase with applied stem and leaf patterns in high relief; a vase of this kind in the David Collection bears a date corresponding to A.D. 1327.[2] A piece of a large open bowl from Abyan had similar relief-ornament.

[1] Sarre, *Die Keramik von Samarra*, 1925, plate xxiii, 9, 13–15; *Trans. Oriental Ceramic Soc.*, ii, p. 65, plate xxvii.

[2] R. L. Hobson, *Catalogue of Chinese Pottery and Porcelain in the Collection of Sir Percival David*, 1934, plate li. Similar vases imported to the Near East are discussed by F. Fichtner in *Ostasiatische Zeitschrift*, N.F. vi, 1930, pp. 74 ff.

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(*c*) *Celadon ware, perhaps of North Chinese origin.*—Stoneware varying from dark to light brownish grey or buff at the foot, with a yellowish-olive or grey-green glaze. Wares of this kind, often with profuse carved ornament, have been widely found in North China. It would seem difficult for stoneware from the North to find its way into Arab ships, which normally called only at the South Chinese ports, and possibly the fragments from Ḥabīl, which consist of bowl-bases and the lip of a closed jar, were made at some minor factory in the south.[1]

(*d*) *Brown-glazed stoneware.*—Coarse paste full of impurities, burning from salmon pink through buff to light or dark grey, usually very thinly potted. The glaze on one piece is thick and almost black, more often it is of varying tones of olive or greenish brown, thin and full of pinholes and pimples. The out-turned lip of a large globular jar could be identified. Most pieces came from closed jars, with the inside unglazed or covered with a thin smear of glaze. One fragment came from the shoulder of a squat globular bottle with short neck flanked by two small vertical handles—a shape known in Siamese stoneware.[2] It is possible that many of these fragments are Siamese, though brown-glazed stoneware must have been commonly made at many provincial factories in the Far East. The fourteenth century may be proposed as a conventional central date. The class was richly represented at Kawd am-Saila.

(*e*) *White glazed stoneware.*—Body similar to the last, and also thinly potted; thick, opaque greyish white glaze. One fragment only, from Kawd am-Saila, of a closed jar unglazed inside. Possibly Siamese, fifteenth century.[3]

(*f*) *Ting ware.*—Whitish opaque stoneware, with opaque ivory-white glaze. Two bowl-fragments from Kawd am-Saila had thick unglazed rims cut flat across, and radiating petal-patterns in relief on the outside. There are many kinds of Ting ware; in South China the class was probably first made early in the twelfth century; the fragments here mentioned may date from the twelfth or thirteenth century.

[1] Nevertheless, "northern celadon" is represented in the Fusṭāṭ finds: see Leigh Ashton, *Trans. Oriental Ceramic Soc.*, ii, p. 67.

[2] See R. Le May, "Ceramic Wares in North-central Siam," in *Burlington Magazine*, lxiii, 1933, p. 204, plate ii A-D for the type of ware; the bottle shape, but with a celadon glaze, is illustrated in W. B. Honey, *The Ceramic Wares of China, etc.*, 1945, plate 148B.

[3] Compare Le May, loc. cit., p. 204, plate iic for the type; p. 207 for the dating.

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(*g*) *Ying-ching ware.*—Granular white porcelain, translucent where thin, with a glassy transparent glaze of faintly bluish tone. Fragments from Chü-lu-hsien, a site in North China inundated in A.D. 1107, show that this ware was then already being made; it seems, however, to have been mainly current in the period twelfth to fourteenth century, when it was gradually superseded by a more compact and hard white porcelain. Kiln-debris at Te-hua in Fukien Province, South China, shows that this was one of many centres of manufacture. "Ying-ching" porcelain has been found in quantity at Fusṭāṭ, and one piece even in Zanzibar.[1] It had also considerable influence on the character of twelfth-century wares made in North-west Persia. One fragment only was found at Kawd am-Saila, part of a bowl with faint engraving under the glaze inside.

(*h*) *Unpainted white porcelain.*—Hard greyish-white body, with thin, glassy transparent glaze, sometimes finely crackled, and in tone greyish or greenish white. The fragments from Ḥabīl and Kawd am-Saila were mostly of convex-sided bowls, thickened at the lip with a bulge on the outside, rather like a modern English pudding-basin. The glaze outside in some cases stops above the foot. One piece has two parallel concentric bands incised inside, under the glaze. Porcelain bowls very similar in shape and material were found at Samarra,[2] and there is another from Fusṭāṭ in the British Museum (No. 1940–4–13/19). It is quite possible that the Ḥabīl and Kawd am-Saila pieces are as early as the ninth century A.D.; but on the other hand there is the evidence of al-Bīrūnī and al-Tha'ālibī that "cream-coloured" porcelain was still being imported to the Near East in the first half of the eleventh century A.D.; and this kind of plain white porcelain bowl may, like the contemporary Yüeh celadons, have continued for centuries as a standard export-ware.

(*i*) *Porcelain painted in blue-and-white.*—The problems raised by this category have already been mentioned (p. 124). It is generally believed that painting in underglaze blue was a technique learnt from the Near East, where it was practised in Persia from the early thirteenth century onwards. The Chinese obtained their best-quality "Muhammadan" blue from the Near East in Ming times (1368–1644). The earliest dated blue-and-white pieces are a pair of

[1] L. Ashton, *Trans. Oriental Ceramic Soc.*, ii, pp. 68–9.

[2] F. Sarre, *Die Keramik von Samarra*, ii, p. 61, No. 216; plates xxiv, xxv.

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large, somewhat clumsy, but ambitiously painted vases in English collections; their inscribed date corresponds to A.D. 1352,[1] and as the inscription refers to a place only seventy miles from Ching-te-chên, they were probably made in this town in south-east China which became such an important centre for porcelain in the fifteenth century and later. Hobson refers to fragments of similar style, painted with confronted ducks swimming among water-lilies, which were found by Sir Aurel Stein at Khara-Khoto on the borders of Mongolia and Chinese Turkestan, and by G. W. Murray at 'Aidhāb on the Sudan coast of the Red Sea opposite Jidda.[2] 'Aidhāb was destroyed in A.D. 1426, and the *floruit* of Khara-Khoto lay in the fourteenth century and earlier. The symmetrical design of water-lilies, with or without flanking ducks, seems to have been very popular on early Chinese blue-and-white export porcelain; many pieces have been found at Fusṭāṭ, where they were copied by al-Ghā'ibī and other local potters[3]; and there are some very fine complete vases in the Serai Collection at Constantinople.[4]

Both at Kawd am-Saila and at Ḥabīl were found fragments of blue-and-white of the class here discussed; a bottle fragment, with the swimming duck pattern, and pieces of rounded bowls with out-turned rims, painted on the outside with the flattened ogee arch-pattern seen on many of the early pieces illustrated by Hobson. The paste is very white, the glaze thick, with a slightly pebbled surface. The blue varies from a pale greyish to a warmer tone, developing black spots where the colour is thickest. We may provisionally call these pieces fourteenth-century, though by analogy with the Annamese vase dated 1450, quoted above,[5] the possibility of a later date should not be excluded.

In addition to these fine pieces there were quantities of poorer quality, mainly rounded bowls, often as small as teacups. They had a glassy glaze, sometimes minutely crazed, and were painted in

[1] Illustrated and described, with other perhaps earlier pieces, by R. L. Hobson in *Old Furniture*, vi, 1929, pp. 3 ff.

[2] R. L. Hobson, *Old Furniture*, loc. cit., p. 4; and Sir A. Stein, *Innermost Asia* plate lvii and vol. i, p. 501; Hobson, "Chinese Porcelain Fragments from 'Aidhāb," in *Transactions, Oriental Ceramic Soc.*, 1926–7, p. 19, and G. W. Murray, 'Aidhāb in *Journal Royal Geographical Soc.*, lxviii, 1926, 235.

[3] A. Abel, *Gaibi et les grands faïenciers égyptiens d'époque mamlouke* (Publication du Musée de l'Art Arabe), 1930, plates xv, 76; xxiv, 112.

[4] E. Zimmermann, *Altchinesische Porzellane im Alten Serai*, 1930, plate 26.

[5] p. 124.

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greyish or blackish blue. Patterns included a diaper of pentagonal cells, outlined petals radiating from the base, and rudimentary floral or lotus motives. One piece had rings of iron-red enamel painting round the base. Very similar pieces have been found in the Philippine and East Indian Islands.[1] They probably represent a southern Chinese or Annamese export ware made in several places from the fifteenth century or earlier till at least the seventeenth century.

IV. *Glass.*

Surface-finds of glass were particularly rich at Kawd am-Saila, and the presence there of large lumps of coarse greenish glass-frit pointed to local manufacture for some, at any rate, of the finds.

Much of the glass was broken into fragments too small to allow the shapes of the original vessels to be recognized. The metal was of many colours; pale blue-green the commonest, followed by pale emerald green and an almost colourless glass with a yellowish tinge. Small and more thinly blown vessels were of pale or deep blue, and pale or deep amber yellow, these being colours consciously contrived and not due to natural impurities in the materials.

The shapes of the undecorated glasses seem mainly to have been bottles, often with a bulge in the neck. Their general character would accord well with the pieces illustrated on plate 3 of Lamm's[2] great work, for which the date-range lies mainly between the ninth and eleventh centuries. Several pieces were from dishes or bottles that had been blown in a patterned mould and then further spun or manipulated, the pattern losing its shape and definition in proportion as this process was prolonged. Examples of rather similar glass are shown on Lamm's plates 9–10, dating mainly from the ninth century.

One fragment only, the neck of a bottle in thick dark blue glass, had wheel-cut sliced ornament of the kind shown on Lamm's plate 55, Nos. 3 and 4.

There were several pieces of dull blue glass overlaid with parallel

[1] See W. Robb and H. O. Beyer, "New data on Chinese and Siamese Ceramic Wares of the Fourteenth and Fifteenth Centuries," in the *Philippine Magazine*, vol. xxvii, 1930. Also R. D. Verbeek, "Oud Chineesch Porcelein in Nederlandsch-Indië," in *Nederlandsch-Indië Oud & Nieuw*, vol. 3, 1918, pp. 107, 357 ff.

[2] C. J. Lamm, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten*, 1930.

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threads of opaque white or white and red, which had been "combed" and then pressed down into the surface. Some obviously came from long thin scent-bottles with facetted sides. For the type, see Lamm, plate 32. "Combed" glass was apparently made from early Islamic times till the twelfth or thirteenth century A.D.

A tiny fragment of thin, opaque turquoise blue glass apparently belonged to a Persian cup or mug like examples in the British and Victoria and Albert Museums.[1] Another isolated fragment appeared to be of the Venetian "chalcedony" glass of the sixteenth or seventeenth century A.D.

Perhaps the most interesting of the glass found at Kawd am-Saila were the numerous womens' bangles or bracelets, usually triangular in section with a deep outer keel. Some were of plain green glass, but the majority had stripes and spots of opaque glass in a variety of colours—white, red, yellow, blue, etc. The work was often very elaborate—"eye" patterns built up in rings of different colour, strands of different colour twisted together to give a bangle circular in section, decoration "combed" and inlaid. One fragment of blue glass had long flat-cut facets on the outer side, with dots in opaque white glass between them. A few short straight strips with strands of two or more colours laid together could not have been fragments of bangles, nor were they beads; it is possible that they were waste pieces from a local factory for these ornaments.

No one yet appears to have studied these bangles, which had a wide distribution in the Near East. The late Sir Aurel Stein had a disturbing habit of discovering them buried at deep levels in the same strata as prehistoric pottery,[2] but on other sites in south-east Persia they appear to have been found by him associated with medieval objects. Two complete coloured bangles in the Victoria and Albert Museum are said to have come from Persia, and two fairly simple ones are included in the list of finds on the ninth century site of Samarra in Mesopotamia.[3] On the site Al-Mīna at the mouth of the Orontes in North Syria, where the medieval finds were

[1] No. C. 134–1936.

[2] Sir Aurel Stein, *Archaeological reconnaissances in north-western India and south-eastern Iran*, 1937. See index for the numerous references, and plate x for coloured illustrations of specimens. See also, Stein, *Innermost Asia*, 1928, p. 963, and plate cxvi for bangles found in the Desert Delta of Sistan.

[3] Victoria and Albert Museum C. 148 and 149–1936 (from Persia). C. J. Lamm, *Das Glas von Samarra*, 1928, p. 108, nos. 299–300.

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apparently in two main deposits representing the ninth to tenth centuries, and then after a gap the thirteenth century, there were practically no glass bangles; the only examples came from graves that on other evidence should be dated in the fifth to sixth centuries A.D., and these were very simple.[1] They were triangular in section, mostly of plain green glass, but in one case of strands of dark and light green transparent glass. The glass bangles found at 'Aidhāb on the Red Sea coast (see p. 128 note 2), appear to have been similar in kind to those from the Aden sites.

It would thus appear from the probably incomplete evidence that these elaborate bangles of coloured glass have been found in greatest quantity in the areas fringing the Red Sea, Arabian Gulf, and Persian Gulf as far as India. It is difficult not to regard Sir Aurel Stein's bangles from chalcolithic strata as intruders. The type of bangle may be presumed to have been current in the Near East before Islam; it reached its greatest technical elaboration after the ninth century A.D. and before the fifteenth century (when 'Aidhāb was destroyed). There is some evidence to think that a factory for this kind of glass existed at Kawd am-Saila, and there may have been others in South Arabia. The technique of using polychrome opaque glass goes back to the XIIth Dynasty in Egypt, perhaps earlier; it is found in the Roman "millefiori" bowls, the Islamic "millefiori" panels at Samarra (Lamm, op. cit., plates viii, ix), and again in Venetian glass of the Renaissance.[2]

It is incidentally worth mentioning that at Kawd am-Saila were found two fragments of very thin bracelets, circular in section, and coloured in strong royal blue and scarlet respectively. These appear to be of comparatively recent Venetian manufacture. There was also a fragment of a bottle with moulded relief decoration, which has been identified as of the kind used to contain a famous modern English lime-juice cordial.

[1] See A. Lane, "Medieval finds at Al Mina in North Syria," in *Archaeologia*, lxxxvii, pp. 74–5. The objects are now in the Victoria and Albert Museum.

[2] It is of interest to find that the making of glass bracelets, with bands and spots of different colours, is very fully described in the famous mediæval technical treatise *Diversarum artium schedula*, Book ii, chapter 31. "Theophilus," the author, has been identified as the monk Roger of Helmershausen near Paderborn; he died *c.* 1120. Convenient translation of the text in C. Winston, *An inquiry into the difference of style* observable in ancient glass paintings (London, 1867), p. 380.

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